The version 2.9 release of the X_{CO2} ACOS data provides a significantly improved data product. The v2.9 ACOS data product has undergone a preliminary validation using roughly 15 months of ground-based data. The validation analysis shows the v2.9 X_{CO2} has smaller biases and significantly reduced scatter as compared to v2.8 data product. The overall bias in the v2.8 data was approximately 7 ppm; improvements in the retrieval algorithm have allowed for the mean global bias to be reduced in the v2.9 retrievals to about 0.13 ppm (1.97 ppm standard deviation). The bias does show a small seasonal variation. Also, this is the first release that includes glint data that is recommended for use in scientific analysis. While the glint and land data show good general consistency, only very preliminary analyses have been carried out thus far, so it is impossible to say with certainty at what level they agree over all regions of the globe.

Though there is significant improvement in the v2.9 data, there are several warnings that data users should take note of when using the product. These include:

- There is an offset between retrieved XCO2 values using the GOSAT H- and M-gain settings. We recommend that caution be used if using the H-gain and M-gain data together. In fact we suggest using only H-gain data for most science analyses.
- It appears that the L2 ACOS products generated using the GOSAT Level 1B data version 130130 (starting on April 19, 2011) produce results that are inconsistent with those generated using previous L1B data. These data should be used with caution if included in a science analysis with data prior to April 19, 2011.
- There is an offset observed between land and ocean glint scenes in the V2.9 data in some comparisons on the preliminary data set. This should be considered when using the data. This offset appears to get worse with the GOSAT L1B v130130 data.

The ACOS Level 2 Data User's Guide provides much more detailed information on the data products and the ACOS project. This includes information on data screening and validation. The ACOS team strongly recommends reading that document prior to performing data analysis with the v2.9 data.